IV.

Words, then, like other things, are symbols representing our interpretation of the external world, as we call it. And it is remarkable how often men have said that words may be mere counters with no meaning behind them and how seldom that things may also be mere counters with no meaning behind them. In *Faust,* Mephistopheles says: "Allwissend bin ich nicht; doch viel ist mir bewusst," and he tells Faust's disciple: "Von einem Wort lässt sich kein Iota rauben." We shall see presently that, far from being the permanent treasure of Mephistopheles's sarcastic teaching, a word is as hard to pin down as a thing (like the space between two trees) and it is as hard to say what a word means as to foretell what speculative shares may be worth in a year's time. For words considered as sounds or sights are physical objects that affect us (like the space between two trees) through the senses, and like other objects affecting the senses are symbols (or key-notes) by the help of which we scale our patterns. Thus considered, what we call words are fictions, just as a tree is a fiction. It is impossible to say what a word is: but all of us recognize what is a word, because it becomes a word the moment we admit that it answers to our idea of a word. As a matter of taste, taking a pedantic point of view, I may say that the phrase "pip emma" does not consist of words. As it is a matter of taste, I am entitled to select my point of

view. But if we agree to take the point of view of a cable company, taste is out of the question: and it is a matter of science whether there are any and, if so, how many "words" in "pip emma."

This is a matter of great importance in education, and we shall deal with it more fully in a subsequent chapter. For the moment it is sufficient to point out that when we allow children to read to their hearts' content, we may be doing them a great disservice. When a criminal is executed, from one point of view it may be "justice," from another point of view "a pity," from another point of view "judicial murder": from a childish point of view it may be "thrilling." It may be all these and many more; but for the child it is hard, perhaps impossible, to keep the points of view apart, and its judgment suffers. In real life we see experience from one point of view and judge from that: in reading books our judgment may be grossly warped owing to our vague view, shifting, as it may, from point to point under the influence of sentiment, until we feel sympathy for people who do things that would disgust us in fact.

But it may be argued that reading a book is only a special form of reading in its widest sense—that all experience is got by reading the external world, of which books are only a small part—and that all reading must be useful. It may be—no one will deny that. But reading books may be a form of self-indulgence in which we are too lazy to construct an adequate meaning for the symbols: that this may be mischievous may be seen if we take an extreme case, such as reading one's accounts carelessly: thus if I bought shares at $100 each and have entered them at that value, I may continue to think of them as worth $100 whereas on the market they are, let us say, worth no more than half. My symbol $100 is correctly read: but not fully, not adequately. We do the same when we trip

or miss a step or run into some one by mistake. Our reading was not complete. But whereas in what we call "real life" we get a practical demonstration of our error, the book gives us very seldom any indication of our errors of interpretation.

This means that at various stages of our mental growth we may have a varying range of what may be called "sufficient symbols." A child's interpretation of the symbol dog may be adequate for every-day purposes, if the child does not own and have to look after one: what is adequate for distinguishing dogs may not be adequate for distinguishing a dog. In the case of the owner of the dog the bark or the appearance would become an adequate or sufficient symbol: any one else might have to look at the name on the collar. In other words, symbols of all kinds (including what are called natural phenomena and words) give rise to various constructions under various circumstances. Strictly speaking, circumstances always differ; hence we may see the "same" symbol twice and consider it in the light of two different scales. Thus we see (as it is called) the same thing, but the thought is not the same. For example, a face may cause us to think of beauty, age, health or character. If at any time we resolve to see faces in the light of some new scale (say "a typical English face") we shall find in ourselves a new interest. And when we speak of encouraging the young to use their eyes, what we are really asking them to do is to see symbols as suggesting position on some scale, the nature of which we often forget to explain. It is of little (if any) use to see patterns (such as a track) if we do not connect it with another pattern (such as fox or bear) which supplies the scale. This consideration introduces the idea of "use," which brings out what was implicit in the term "sufficient." The formation of patterns, as we have seen, is largely a matter of emotion. In the same way the com-

bination of patterns is the result of interest or passion: fear, hunger, lust, and interests that have their root in these passions, are largely responsible for what may be called the adjectival attitude. For instance, a horse may be thought of first as "one"—"horsy one"— then *white* if we are interested in color, *tall* if we are interested in size, *worth much* if we are interested in price, *the property of a fool* if we are interested in buying it; every new pattern or scale that is added classifies or limits the original pattern from a new point of view, and if we shift from one to another it is at the prompting of some interest or passion.

Thus it appears that our thinking proceeds from the recognition of patterns, the discovery of the duties that are to be expected from our instances and the combining of patterns with patterns for the purpose of scaling them. Thus we recognize instances of "cat": we learn the duties to expect of every instance: we learn to locate any instances in space, time, size, breed, color, temper, age, value and so on.

This being so, it is clear that the difference between quantity and quality is a difference that rests entirely on convention and has no logical foundation whatever. Both quantity and quality, as usually understood, are scales, and both are mathematical: and there is no reason why a scale should be looked upon as giving quantity accurately (i. e., by measure) and quality vaguely (i. e., by impression). We give both quality and quantity as accurately as we want to. Thus I can say there are about 100 men, or that some one's work is excellent; but if I were required to do so I could state my measurements more accurately, *103 men*, and of all the work I am thinking of *the third best*. It will be seen in a later chapter that what we usually call positive adjectives are not positive: a positive adjective is not an adjective in the ordinary sense of the word, it is a part of a compound noun. A good shoe is similar in logic

to a horseshoe unless we are laying stress on "good," and in that case it means a *better* shoe. We get a blackbird or a black bird: in the second case the black clearly gives a color scale, just as bird gives the creature scale: but in blackbird the black is part of the pattern and gives no scale, as is seen more clearly when we speak of white wine.

The common assumption that mathematical, musical and scientific symbols are accurate, whereas the symbolism of language is vague and full of shades of meaning that cannot exactly correspond to the so-called complexity of life, reality, the universe and so on, is a superstition that has given a commission to much nonsense. The mistake lies not in thinking that ordinary language is vague and full of shades of meaning, but in thinking that mathematical, scientific and musical notations are perfect or accurate enough for all purposes. All these forms of symbolism work in the same way and are liable to the same defects. All start with patterns which are subjective and have to be connected with arbitrary symbols which may be subjective but are usually "We" symbols: and all these patterns are located by means of various other patterns (likewise subjective and connected with "We" symbols) and thus scaled as accurately as is required. Any mathematician, musician or scientist will admit that he works with symbols that are rough and ready—often far too much so; what is not so frankly admitted is that all these, together with the symbols of language, are rough and ready in the same way and for the same reason, because they are all essentially of one kind and work in the same way.

So far, then, we have seen that a word in the widest sense (including such symbols as H, 2, C♯) represents a pattern and is meaningless unless scaled by means of another pattern. H, 2 and C sharp *mean* nothing until we can scale them. Or perhaps it would be better to say they can mean nothing useful: for undoubtedly if we rec-

ognize something as hydrogen, we have the meaning that that *one* is a hydrogen one, by which I mean that that, in my opinion, will behave in a hydrogen way, which I could not do intelligently without knowing something about hydrogen and thus being able to scale it with such patterns as gas, matter, density. And this brings us back to the consideration of the behavior of our patterns, for we expect duties from them in order to be able to tell what happens on the time scale. The space scale is of vital importance to us if we wish to avoid accidents and to survive; the time scale is as important but in quite another sense: it is conceivable that it is the invention of a time scale that gave man his great advantage over other forms of life.

The conception of time has become so habitual with us that an educated man has to undergo a special training in order to think without it. It is true that the uneducated still use a very primitive time scale; but the uneducated take no part in building up any conception of the universe that would help them to explain the past or the future to any one's satisfaction, except perhaps in some narrow field of knowledge, such as husbandry or sheep rearing.

We have already seen that the popular idea of time covers two distinct things: there is, on the one hand, the present which is outside time altogether; on the other hand, time which is a pattern like any other and supplies a scale which (owing probably to its origin) has before and after aspects which are purely spatial; and it is curious to note that the time scale has much more of what is commonly called space than the space scale. The hope of ever discovering the origin of such a conception as time is no doubt vain. There can be little harm, then, in conjecturing that it arose from the fact that men lost themselves in deserts or on the high seas. In both these places the space scale fails: one is not interested—or rather there is no use—in knowing *where* he is, but it is profitable to

know *when* he is, whether at the third or fourth or fifth day's lapse. Such distances were not measured by space but by a more useful scale of time, and the mere fact that the space scale measures the tangible and the time scale the intangible gives some idea of the stride that was made by the first men who learned to use a time scale.

Popular superstition attributes a measure of reality to the "past" which it denies to the "future": it is important to recognize that this is nothing but a convenient fable. In practice and in theory it is necessary to work from the assumption that the only knowledge possible is in the present, but that by means of patterns and scales we can get the conceptions of a here and a there, a now here and a now there. Later we shall get a conception of what lies between here and there and between a now here and a now there. By this time we shall be well on our way to an intelligent view of the universe, but no amount of progress would ever make the past or the future visible: both the past and the future are constructions made subjectively (with "We" patterns, it is true) in the present, and of the two the future seems the better known, for our construction of the past is one which (by definition) is not so readily tested or verified. The babblers and gossips are the great authorities concerning the course of history yesterday: he who dares to tell the history of to-morrow must weigh his words and understand to-day as only a wise man may.

V.

As a boy I was brought up on mysteries. Faith was a virtue. And I was made to feel ashamed of harping on such grammatical questions as: "Why *three* persons?" I felt that two would be sufficient, and I still think that any open-minded grammarian must admit that there can be only two. It was also a riddle to me why in such a sentence as: "The dog bit the cat," the dog should be called the

subject. I saw the necessity of saying so for the purposes of examination: but when a master started to explain that it obviously was so, my instinct rebelled: for it was obvious to me (and still is) that, if that sentence had a subject, it was the biting, and that dog and cat were merely plus or minus adjectives "qualifying"—as we used to be made to say—the bite: for the bite is either a dog bite or a cat bite as the point of view shifts from the dog to the cat, and from an unbiased point of view, it is dog-cat biting; and the tense of it is merely the result of perspective due to the historian's point of view.

I would not for a moment deny the existence (or the charm) of mysteries. I am old enough to have discovered (and may be my sons have too) that mysteries often begin where a man's explanations fail. I admit that dogs and cats and bites are no less mysterious when parsed idiotically; nor are two persons less mysterious than three. What I want to argue and, if possible, prove, is that infinity and eternity are no more and no less mysterious than cats or dogs. In other words, I claim to be able to know just as much about eternity and infinity as I do about dogs or cats.

Everybody understands that you can go on counting the cardinal numbers forever and ever—and you can go on halving the half forever and ever. It is the forever-and-ever that is supposed to stagger the imagination. And yet there is nothing that we can think of that has not this forever-and-ever tail. Time ticks theoretically forever and ever; space is limitless; our bread and butter is infinitely divisible. It does not require much thinking to discover that everything we think of is infinite, but that it is impossible to think of it unless we think of it as finite. An ice cream is no more obvious and elusive than anything else: any child can tell us what is an ice cream, no scientist can tell us what it is. Any fool can tell what is Germany: will any one tell us

what Germany is? We all know what is a dream: who knows what a dream is? There seems to be still a kind of messianic hope that science will one day enable us to say what an ice cream is. It is one of the purposes of this chapter to help to shatter this belief.

When we recognize that we cannot tell the beginning or the end of a "heap," we are recognizing an obvious instance of what is the case with all things. There is nothing that we can think of, that cannot be thought of as being infinite; but the moment we think of it as infinite, it ceases to be that thing. A point may logically be any "size": in practice it is always impossible to arrive at a position without magnitude without being able to think of a position minus magnitude (it may seem very perverse to do so, but there is no doubt whatever that we can); but in theory it is always possible to take a point, be it as large as the world, and think of it without thinking of magnitude, and then you have the mathematician's desire, position without magnitude. But this is not because a point has no magnitude: it is because you can consider its pointedness without considering its magnitude.

If an iceberg is floating on the ocean, we can think of the visible portion without thinking of the submerged part; in fact, it is quite possible to have seen hundreds of icebergs and camped on them, without knowing anything about the submerged part. If the submerged portion extended down and down forever and ever, an iceberg would be a nice example of what things are like. For ordinary purposes of life, we deal only with the visible portion: if we try to get to the bottom of the other portion we are lost.

If I look at my fire and ask myself: "What is it that I call my fire?" I can soon convince myself, that although I know quite well, I cannot say exactly; or rather, I can tell you exactly, if you will allow me to take what corresponds to the visible part of the iceberg and ignore the submerged

part which, if I once start thinking of it, goes on forever and ever. Even such a stolid thing as my poker, if I put one end into the fire, ceases, I know, to be (if ever it was) homogeneous. And if I once begin to wonder what is going on inside it, I am slipping off the *thing* which is a poker—quite easy to conceive because I am thinking only of its pokerishness—I am slipping off into a consideration, let us say, of its molecules, or any other primrose path to the ever and ever.

Even such an abstract as "virtue" must be finite in order to be thought of. There was a time when I thought that definitions were to be found in dictionaries. But the philosophers who, in recent years, have been beholding logic in the light of mathematics, have changed all that. We now know that symbols have meaning only in series. What we call in English *that virtue,* that is, a particular instance of virtue which won a particular medal, is something located in a space series. If we speak of *a* virtue, we may still mean the same *thing,* but we are no longer in the same set of series: for instance, it is not located in space. We can also speak of *virtue,* and this brings in a series of "value" located in the present (which is no more "time" than the bridge over a river is water). In each of these series, the thing, virtue (or any other) has its forever-and-ever tail or submerged portion, and the moment we choose to think not of what is virtue but of what virtue is, we slip off into the inconceivable. We do not ask a policeman: "What is the way to. . . . ?" We say: "Which is the way?" The right answer to the common question, "What's the next train?" is "I'm sorry, but I haven't time to tell you." You are not thinking at all if you want to know what virtue is. You can't be thinking until you put the question into the form "Which is virtue?" Or, as the mathematicians might express it: you cannot think of one member of a series at all, unless you first recognize the series as a

series to which that member belongs. And *virtue* is meaningless unless you have a notion of the plus and minus neighbors which define it and thus furnish an equation.

It seems as if thinking is done by instinctively escaping from the infinite, much in the same way as Noah's wretched contemporaries dodged the flood for a while by finding effective spots. And infinity itself is perfectly conceivable, so long as we think of what is infinity, and not of what infinity is. I defy any one to tell me what a flood is: but in Noah's time even the children knew what was the flood.

For though what we are conscious of is infinite, we can concentrate our attention on some part: and that is called thinking. The field of consciousness thus defined is recognized as a pattern and can be, as we have seen, located on scales. What we call science begins in the discovery of another pattern which is different or another which is similar. These patterns are known to us only in their context which is infinite. But they are thought of with the infinity left out, much as bank returns may be given with 000,000 left out. We use 6, understanding that we mean six millions. So we use a pattern, let us say *fire,* understanding that we really mean *fire* + an infinite context. In recognizing that patterns are different we discover scales; when we scale patterns we are treating them as if they were similar. The moment we have differences and similarities we are dealing with what can be dealt with mathematically. It is commonly believed that we can count dogs; but it is impossible to add three dogs, and it is impossible to add a dog, a headache and a total eclipse, until we discover some common abstract by which they can be called three.*

It is natural, but risky, to assume that a prompt answer means much knowledge. If an examiner asks a child to say what it knows about either an acrobat or a micro-

* In fact you can count and name things only if you pretend you know only one thing about them, namely that they are "the same," which they are not.

scope, the common assumption would be, that, if both were familiar words, the choice of one would indicate that less was known about the other. But it is not paradoxical to say that it is easier to explain the "less known" than the "better known." For, putting aside the special case of examinations in which explanations are right if they satisfy the examiner, we may say that it is never the function of an explanation to explain: it is the function of human explanations to satisfy. (What happens when "things explain themselves," we need not stop to consider now.) The more we learn, the harder are we to satisfy: hence the common lot of all thinkers, who, like Faust, feel desperately lonely as they approach a position (which must be God's) where no explanation whatever satisfies. The strongest argument in favor of the doctrine of original sin is that human beings seem naturally hard to satisfy—children show it. Fortunately we have education to assure us that knowledge is bliss and that 'tis folly to be agnostic.

Or, again, we may say that the progress of science implies the reduction of knowledge. In this sense. If I had lived in the good old days when science had not progressed much, I should have *known* that all things were made by Jove; therefore, my kittens were made by Jove. Science would have progressed and I might have learnt that Jove made only white kittens: the black ones clearly were attributable to Pluto. This looks like additional knowledge. But sooner or later I should have come across a kitten white and black: who made it? And I begin to regret the blissful days when I *knew*. My ignorance becomes still more profound when I discover one fine day that a cat makes a kitten: it becomes almost intolerable when I realize that it takes two cats to make a kitten. And I go down in sorrow to the grave, wondering what it takes to make two cats.

However, in spite of the progress of science, most of

us still behave in ordinary circumstances as if we were wise. In spite of my ignorance, I go into a baker's shop: and although I have no idea what bread is, I am probably content to accept what is offered as if it were bread; I feel that I know it is bread, though I don't know what bread is; I see it weighed, and although, in my ignorance, I cannot tell what immeasurable error there may be, I am content to accept it, as if it were a loaf.

What is it that enables us to do business so confidently in such a field of ignorance? Surely, those finite patterns of which I spoke. I go into the shop having three definite patterns: bread, loaf, loaf of bread. If I get something that answers to those patterns, I am satisfied. If I can concentrate attention on the infinite context that surrounds me and I find something that I can accept as answering to my pattern bread, I say that I know that that is bread.

My small boy (aged 2) is an authority on the cat pattern. He spots them all over the place. But a good many spots of the infinite context which fit his cat pattern—and he *knows* they are cats—would fit patterns which I call bears, tigers, leopards, panthers, etc. What I call a lion pattern is still a cat for him; but he has doubts: his ignorance is increasing.

Such a pattern has to be developed by each individual for himself in response to the stimulus of what may best be called an effective spot in the flood of consciousness.[1] What makes the spot effective is a question concerning which physiologists are displaying an ever-growing ignorance. The process is most intricate: it requires the utmost patience and courage to refuse to call a halt and to refuse to

[1] Mr. Bertrand Russell in a recent article says, "I shall continue to protest it was not I who made the world." Sure! But he need not have protested so innocently: there was a time when he came very near thinking it himself. I gladly take this opportunity of testifying that I can see no reason for thinking that Mr. Russell was in any way implicated in the creation of what I have called the infinite context. But I hold him to be entirely responsible for the effective spots he has noticed and also for the names which he gives to these colonies of his mind.

be satisfied . But at the risk of being too easily satisfied, I fancy that consciousness must—at any rate for some time to come—be explained in terms of positive and negative pressure. An apple touched by the sunlight turns red and a sunflower turns round. Apples and flowers may be slow thinkers, but it is hard to escape the conviction that this "turning" has something to do with what they think is the sun. Everything (at present) points to the conclusion that what we call the sun is known to us only because it has an effect *in* us, just as it has an effect *in* apples and flowers. We are all like the dog in Æsop's fable: we think the meat is in the surface of the river: we see the meat in the river and are blind to the meat in our mouths. Fortunately, we cannot drop the meat; we deal in practice with the real piece; but we think we are dealing with the reflection. Hence our little troubles when we argue about cause and effect.

For the moment we must be satisfied that nature is known to us only in effective spots to which we give quite arbitrary but convenient names, as soon as the spot has made its impression on us in the form of a pattern. The name is arbitrary because it cannot matter whether I call a particular pattern a dog or a bow-wow. It is convenient because if I want to order a dog I can count on not receiving a wolf. If I am not satisfied with *any* kind of dog, I shall require a more convenient name, I may even want one particular spot: in that case the name becomes arbitrary and proper. But it is obvious, at least to me, that there is no *logical* difference between the group containing all dogs and the group containing one dog. (I admit there is a difference, and I would be satisfied to call it a *political* difference.) I could, and I do, continue to give arbitrary and convenient names to various portions of the dog, and if it were necessary, I should give arbitrary and convenient names to each of the hairs. This statement may seem ab-

surd in those who are misled by the ease with which we ignore differences—leaving them in what I called the submerged portion of the dog. There is nothing staggering in the idea of infinity: but the infinite difference between two hairs, or two dogs, or any two things which you and I calmly count and call alike, is enough to and does stagger the most robust imagination.

It should now be clear that infinity and dogs, *as such*, cannot be said to exist. We have an effective spot, which, if it fits our pattern dog, *is* a dog. What a dog *is*, is, as we have seen, inconceivable. There appears to be some reluctance to admit that a thing cannot exist as a thing, until some one recognizes it as a thing. When Cain slew Abel, Abel was not a corpse until Cain saw that he was. The case may be illustrated thus: a drop exists in the ocean, but not *as a drop* until it is separated from the ocean. So things exist, as it seems, in the ocean of what we are conscious of, but they do not exist *as things* until we pick them out, until they have become patterns (effective spots). The Great Bear is a pattern that exists only because and if we see it: I have known people who could see the stars, but could not see the pattern. It is also possible—though undoubtedly rare—to be unable to see the orthodox pattern *dog*. Or we may illustrate it thus: in a perfect mirror the reflection would be an exact reproduction of reality: how do we always know that it is a reflection? Because of the border—the limits of the mirror. An image in a mirror without a boundary could not be distinguished from reality. Large mirrors are notoriously deceptive. It is likewise possible to think because our thought has a border or is limited. We know that a thing is "there" in much the same way as we know that the reflection in the mirror is not real, namely, by means of the border which enables us to see that it stands out against an indeterminate context which we can ignore.

In a short essay it is not possible to do more than suggest the outlines of an explanation that might satisfy us to-day. But it may be useful to lay stress on the fact that progress in the past has been seriously hampered by the "knowledge" that reason is responsible for our patterns. I do not deny that patterns can be formed reasonably: it is perhaps possible to consider a decimal point in an entirely reasonable way. But most of our patterns are formed (or informed) by emotion, and the adjectival frame of mind (as revealed by the man who called decimal points "those d—d dots") is very common and quite unreasonable. It seems that reason (which has always been ludicrously overrated by rational and irrational people, just as beauty is overrated both by the fair and the plain) is a very small, perhaps negligible ingredient in thinking. There may be an entirely reasonable way of thinking of mothers-in-law: but sons-in-law have been known who think of "dear granny" in the presence of their children; of "your foolish mother" in the presence of their wives; and of heaven knows what in private in moments of depression. These aspects of the same effective spot overlap, and they run into one another like wet water-colors; the resulting blend is what the mother-in-law pattern becomes—reason being entirely blurred. In the same way, children have to deal with certain effective spots which interest them greatly. They might form quite reasonable patterns, but propriety compels them to form one pattern for public use, and some interest of the type described as analerotic in the blunt, frank language of psycho-analysis, compels them to form another pattern for secret use. The one may be called an "I" pattern, the other a "We" pattern. The combination often produces startling results. We may laugh at a dog's response to the sound "rats!" But his antics are not a whit more emotional than most (I mean *most* and had almost said *all*) of our interpretations of effective spots. We

recognize that no one can explain (to everybody's satisfaction) what is humor. What we admit in the case of humor, we refuse to admit of all things. Yet, just as nothing is humorous unless it strikes us as humor, so nothing is a thing unless it strikes us as such. There is nothing in the sequence "Getting on, getting honor, getting honest" that would help us to decide whether it is a reasonable life's purpose. But there is no doubt whatever that if it strikes us emotionally as being reasonable, it is reasonable. Who says so? *We* say so, or (very rarely) I say so.

I say *very rarely*: I should prefer to say that we are never logically justified in using the first person singular. The ego, about which so much has been so confidently written that one would suppose it had been vivisected, is a palpable fiction: the mischief is that philosophers concentrate on the palpableness and ignore the fictiveness. Nature, in practice, is said to abhor a vacuum: society, in practice, abhors an ego. The few that blossom and bear fruit do so behind the walls of our asylums or prisons. A man is said to be insane if he really uses the pronoun I in preference to the pronoun We. It is psychologically absurd to put a creed in the first person singular. People who really believe in a singular creed are called singular. The ego is not acceptable in the pure state: it is the correct blend of the I and the We that produces the good citizen. Blessed is the man who can truly say that his I and We patterns are the same.

We have said that a pattern must be definite, but only in the sense that "English people" is definite. The composition of a pattern is constantly changing: like the "English people," it may in time consist of an entirely new set of individuals, without ceasing to be itself. A swarm of gnats on the wing is difficult to paint: you may paint in all the gnats with utmost care: you won't be satisfied: you've got

everything except the living, moving *swarm*. You've got the individuals, not the crowd. And though a pattern is composed, as it seems, of single experiences, it is not the sum of those experiences, it is the swarm of them. It is indeed a number of notes, but also a phrase. Its characteristic property is as elusive as the difference between a regular polygon of a very great number of sides and a circle.

Seeing, then, that a pattern is always conceivable, for it is essentially a conception (emotionally conceived), we have still to deal with the question: How do we know when an effective spot fits a pattern? What is the process by which a child in his second year can spontaneously jump to the conclusion that a picture of a cat in a cheap illustrated paper is the "same" as a live cat?

This is a most astonishing feat. I may be conceited, but I sometimes visit picture galleries and I stand wrapped in pleasure at my wonderful cleverness in guessing every object in a picture: and I go out into the crowded street and find I can do it just as well there, although half the objects are moving—. If nobody else could do it. . . . In all seriousness, how is it done?

We cannot in this article do more than paddle on the edge of this deep question. More than a step or two and we should be up to our necks in it. For the moment you must allow me to use the word "expect" without explaining it. If an effective spot appears and I can fit it to a pattern—in other words, name the effective spot—I am succinctly asserting my conviction that it will do its duty. Whatever we think of as a thing is thought of on the basis of expectation that it will do its duty. Being puzzled by a baby's recognition of a "cat" in a very indifferent picture, I tried to discover what duty was expected. I found that the pattern "cat" was, after all, an "I" pattern and not the orthodox "We" pattern, as I had at first supposed. Some

effects, which I thought were unmistakably cats, were ignored: and one effect, which I took to be an engine, was emphatically declared to be a cat. In a few minutes I had satisfied myself that it was *the tail* (or smoke) that fitted the cat pattern: that was the duty expected of a cat—the remainder of the cat as seen alive seems to have been considered (if at all) as an irrelevant appendage. If you analyze what the average Englishman means by Russia, you'll find much the same performance.

Now, why do we expect? In answering this I enter rashly in where physiologists fear to tread. But a tentative answer may convince you that infinity is for most of us a less subtle conception than dog. There seems to be only one way in which we can expect a duty. It is betrayed in every effort to explain the duty we expect of God: namely, by anthropomorphism. We are in the pattern and act as if we were the pattern: hence we know. Sometimes the effective spot does not do what we expected of it and then we give it a new name. A good example of this is the name X-rays given to rays that did what they were not expected to: the name implying that at the time scientists did not know what to expect of them. Nowadays we feel quite confident that we should know how to behave if we were suddenly turned into X-rays—which indeed we are, in a very real sense, whenever we recognize them.

If that is so, it is clear that most of us recognize (or are for a moment turned into) dogs far more often than we are turned into infinity. Hence the duty we expect of infinity is a simple one (for us, not for mathematicians!) compared with the manifold duties we expect from our dog pattern.

To sum up. Whatever the pattern, it is by nature conceivable: whatever the duties expected, they cannot explain, but they must satisfy. There can be no progress, no change in the quality of our knowledge: what was once reported

to be one thing is now officially presumed to be another. What changes is the quality of our satisfaction: what would have satisfied the greatest of our ancestors fails to satisfy thousands living to-day. It is not easy to see why we should suddenly be becoming so rapidly harder and harder to satisfy. It looks like a fever that civilization may die of.

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